Appl. No. 10/678,663 Amdt. dated December 21, 2006 Reply to Office Action of June 22, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-19 (canceled)

1 20 (previously submitted): A fluorinated thermoset polyurethane elastomer 2

represented by the formula (I):

$$A = \begin{bmatrix} CH_2 - O - (CH_2)_n R_f & H & H \\ CH_2 - C - CH_2 - CH_2 & CH_2 - CH_2 - CH_2 - CH_2 & CH_2 - CH_2$$

a polyether segment; a polyisocyanate unit covalently bonded to the polyether segment; and a 4

cross-link formed from a cross-linking agent,

1 wherein:

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2 n is from 1-3;

R is independently selected from the group consisting of methyl and ethyl;

R_f is independently selected from the group consisting of perfluorinated alkyls

having from 1 to about 20 carbons and oxa-perfluorinated polyethers having from about 4 to

6 about 20 carbons;

7 X is a variable integer from about 10 to about 250;

Z is a variable integer from 2 to about 50 8

R¹ is a divalent hydrocarbyl radical; 9

10 A is an end-group selected from the group consisting of H and an isocyanate

11 fragment; and

12 B is an end-group selected from the group consisting of a fragment having an OH

13 and an isocyanate fragment. Appl. No. 10/678,663 Amdt. dated December 21, 2006 Reply to Office Action of June 22, 2006

I	21 (previously submitted): The fluorinated thermoset polyurethane etastomer of
2	claim 20, wherein the cross-linking agent is selected from the group consisting of a low
3	molecular weight polyol and a low molecular weight polyamine.
1	22 (previously submitted): The fluorinated thermoset polyurethane elastomer of
2	claim 20, wherein the crosslinking agent is selected from the group consisting of
3	trimethylolpropane, pentaerythitol, trimethylolethane, triethanolamine, 1,4-butanediamine,
4	xylene diamine, diethylenetriamine, methylene dianiline, diethanolamine and combinations
5	thereof.
1	23 (previously submitted): The fluorinated thermoset polyurethane elastomer of
2	claim 20, wherein the polyether segment is produced from at least one monomer selected from
3	the group consisting of 3-(2,2,3,3,4,4,5-heptafluorobutoxymethyl)-3-methyloxetane; 3-(2,2,2-
4	trifluoroethoxymethyl)-3-methyloxetane; 3-(3,3,4,4,5,5,6,6,7,7,8,8,8-
5	tridecafluorooctyloxymethyl)-3-methyloxetane; 3-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-
6	heptadecafluorooctyloxymethyl)-3-methyloxetane; and 3-
7	(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosa-fluorododecyloxymethyl)-3-
8	methyloxetane.
1	24 (previously submitted): The fluorinated thermoset polyurethane elastomer of
2	claim 20, wherein the polyisocyanate unit is produced from an isocyanate selected from the
3	group consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-
4	methylene diphenylisocyanate (MDI), polymeric MDI (Isonate®), toluene diisocyanates,
5	saturated MDI (HMDI), polymeric HDI (Desmodur® N-100 and N-3200), trimethylhexane
6	diisocyanate and combinations therof.
1	25 (previously submitted): A method of making a fluorinated thermoset
2	polyurethane elastomer, comprising the steps of:
3	a) mixing a prepolymer with an isocyanate, a cross-linking agent, and a
4	catalyst to form a reaction mixture, wherein the prepolymer is produced from a monomer

5	selected from the group consisting of FOX (fluorinated OXetane) and FOX/THF
6	(tetrahydrofuran); and
7	b) curing the reaction mixture to form the thermoset polyurethane elastomer.
1	26 (previously submitted): The method of claim 25, further comprising the steps
2	of casting the reaction mixture into a mold; and degassing the cast reaction mixture after step a).
1	27 (previously submitted): The method of claim 25, wherein the mixture is cured
2	at a temperature between about 20°C to about 150°C.
1	28 (previously submitted): The method of claim 25, wherein the reaction mixture
2	is heated to about 65 °C for about 3 to about 16 hours.
1	29 (previously submitted): The method of claim 25, wherein the isocyanate is
2	selected from the group consisting of hexamethylene diisocyanate (HDI), isophorone
3	diisocyanate (IPDI), 4,4'-methylene diphenylisocyanate (MDI), polymeric MDI (Isonate®),
4	toluene diisocyanates, saturated MDI (HMDI), polymeric HDI (Desmodur® N-100 and N-3200),
5	trimethylhexane diisocyanate and combinations thereof.
1	30 (previously submitted): The method of claim 25, wherein the cross-linking
2	agent is selected from the group consisting of a low molecular weight polyol and a low
3	molecular weight polyamine.
1	31 (previously submitted): The method of claim 25, wherein said crosslinking
2	agent is selected from the group consisting of trimethylolpropane, pentaerythitol,
3	trimethylolethane, triethanolamine, 1,4-butanediamine, xylene diamine, diethylenetriamine,
4	methylene dianiline, diethanolamine and combinations thereof.
1	32 (previously submitted): The method of claim 25, wherein the catalyst is a
2	member selected from the group consisting of dibutyltin dilaurate, triethyamine, triethylene

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octanoate and combinations thereof. 4 1 33 (previously submitted): A method of making a fluorinated thermoset 2 polyurethane elastomer, comprising the steps of: 3 mixing a prepolymer with an isocyanate, a cross-linking agent, a catalyst a) 4 and a solvent to form a reaction mixture, wherein the prepolymer is produced from a monomer 5 selected from the group consisting of FOX (fluorinated OXetane) and FOX/THF 6 (tetrahydrofuran); and curing the reaction mixture to form the thermoset polyurethane elastomer. 7 b) 34 (previously submitted): The method of claim 33, further comprising the step 1 2 of applying the reaction mixture onto a surface or into a cavity after step a). 1 35 (previously submitted): The method of claim 33, wherein the curing is 2 performed at a temperature between about 20°C to about 150°C. 1 36 (previously submitted): The method of claim 33, wherein the isocyanate is 2 selected from the group consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-methylene diphenylisocyanate (MDI), polymeric MDI (Isonate®), 3 toluene diisocyanates, saturated MDI (HMDI), polymeric HDI (Desmodur® N-100 and N-3200), 4 5 trimethylhexane diisocyanate and combinations thereof. 1 37 (previously submitted): The method of claim 33, wherein the cross-linking 2 agent is selected from the group consisting of a low molecular weight polyol and a low 3 molecular weight polyamines. 1 38 (previously submitted): The method of claim 33, wherein said crosslinking 2 agent is selected from the group consisting of trimethylolpropane, pentaerythitol, 3 trimethylolethane, triethanolamine, 1,4-butanediamine, xylene diamine, diethylenetriamine, 4 methylene dianiline, diethanolamine and combinations thereof.

diamine, triphenyl bismuth, chromium acetylacetonate, lead octonate, ferric acetylacetonate, tin

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1	39 (previously submitted): The method of claim 33, wherein the catalyst is a
2	member selected from the group consisting of dibutyltin dilaurate, triethyamine, triethylene
3	diamine, triphenyl bismuth, chromium acetylacetonate, lead octonate, ferric acetylacetonate, tin
4	octanoate and combinations thereof.
1	40 (previously submitted): The method of claim 33, wherein the reaction mixture
2	is heated to about 65°C for about 3 to about 16 hours.
1	41 (previously submitted): The method of claim 33, wherein the solvent is
2	selected from the group consisting of tetrahydrofuran (THF), carbon tetrachloride, chloroform,
3	trichloroethylene, chlorobenzene, ethyl bromide, dichloroethane, fluorinated solvents, sulfur
4	dioxide, hexanes, petroleum ether, toluene, dioxane, xylene, methylene chloride, Freon and
5	mixtures thereof.